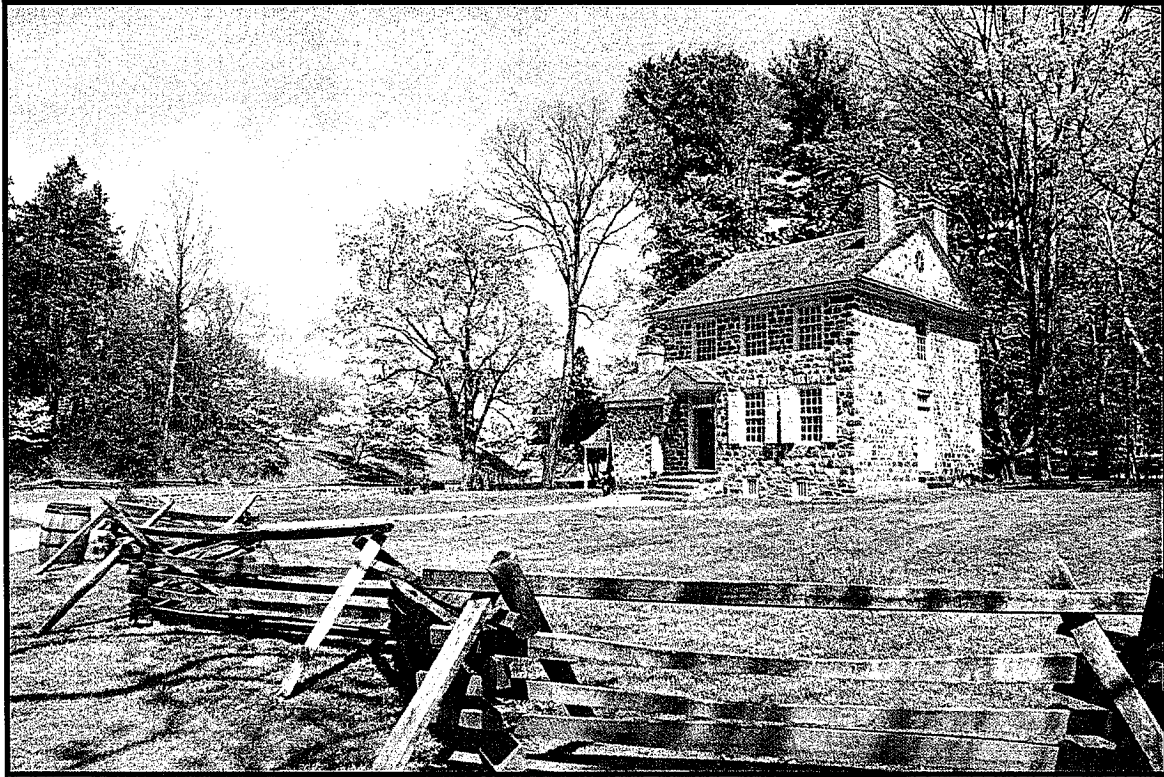


Valley Forge National Historical Park

Transportation Scholar Report



Dan Carl, AICP
June 2005 – July 2006

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1.0 Introduction

This report summarizes the work I completed as a Ford Motor Company Transportation Scholar at Valley Forge National Historical Park (NHP) from June 2005-June 2006. The Transportation Scholar program is administered by the National Park Foundation and its purpose to place transportation planning professionals in national parks on a temporary basis. While working in the parks, scholars are asked to assist on a variety of transportation projects but the overarching goal is to improve transportation within in the parks. Many parks suffer from traffic congestion, air pollution, or access problems. With the help of the scholars, some of the issues may be addressed.

I would like to thank the Ford Motor Company and National Park Foundation for their gracious sponsorship of the program. I would also like to thank the staff Valley Forge National Historical Park for hosting me. Special thanks in particular go to Deirdre Gibson, Chief of Planning and Resource Management; and Mike Caldwell, Superintendent. Deirdre and Mike integrated me with the staff and operations of the park in such a way that I felt like I was park of the NPS team. I would also like to express my thanks to Eddie Gonzalez of the National Park Found who helped bring me and Valley Forge together for this great opportunity.

Working at national park in a suburban area has truly helped me understand the importance of our national parks. They are incredible resources that should be cherished and preserved. I am proud of the small role that I have played in the on-going effort to improve visitor experience and preserve one of our national treasures – Valley Forge National Historical Park.

Dan Carl, AICP
June 2006



A program of the National Park Foundation,

 NATIONALPARKS.ORG



2.0 Valley Forge National Historical Park Overview

Valley Forge National Historical Park is located at the western edge of the Philadelphia metropolitan area. Several major highways and interstates are located adjacent to the park and they experience severe traffic congestion. The regional highway congestion is exacerbated by the state highways that run through Valley Forge NHP. The state highways carry significant amounts of commuter traffic destined for the regional highway system. The cumulative effect of the commuters and regional traffic congestion is a diminished park experience for visitors.

Valley Forge NHP collaborates with several private, quasi-public, and governmental partners on the complex transportation problems that affect the park and the region. Multiple transportation planning and construction projects are underway to help address the congestion. Valley Forge NHP staff actively participates in the planning for these projects. As the transportation scholar, I provided short-term technical expertise and long-term planning and best-management practices to help the park prepare for the changes that would occur after my departure. My basic approach to my one-year placement was as follows:

1. Assess the existing conditions at Valley Forge NHP
2. Review the regional transportation planning and construction projects that would affect Valley Forge NHP and its visitors
3. Identify short-term improvements that may be implemented as part of existing projects or with minimal park expenditure
4. Identify long-term improvements that require special funding resources and advanced planning

This report is divided into two sections. The first section documents short-term projects that resulted in a positive outcome for the park and its visitors. The second section documents long-term planning needs and recommends means to address the needs.

3.0 Short-term Projects

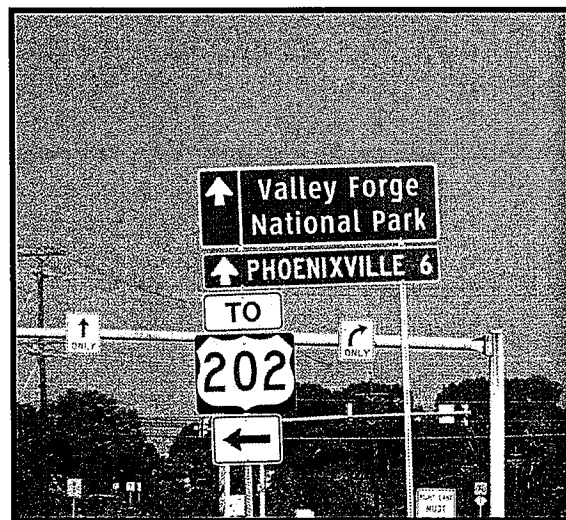
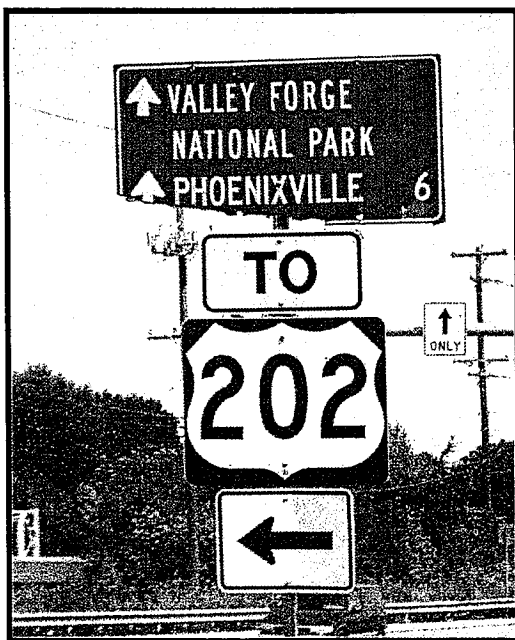
3.1 *Improving the Highway Signs to Valley Forge NHP*

The land development pattern and area road network makes accessing Valley Forge NHP difficult for first-time visitors and people unfamiliar with the area. One of the most frequent visitor complaints rangers receive is how difficult it is to get to the park. Directional signage to park on approaching highways was fair at best.

One of the first projects I completed was the complete documentation and assessment of the current signage conditions. I worked closely with the Valley Forge Convention and Visitor Bureau (VFC&VB) to complete this assignment. VFC&VB operates an information desk within the Valley Forge NHP Welcome Center. At the information desk, they help visitors find hotels, transportation, and other attractions near the park in addition to providing information about the park itself. The VFC&VB fields many phone calls and complaints about accessing the park.

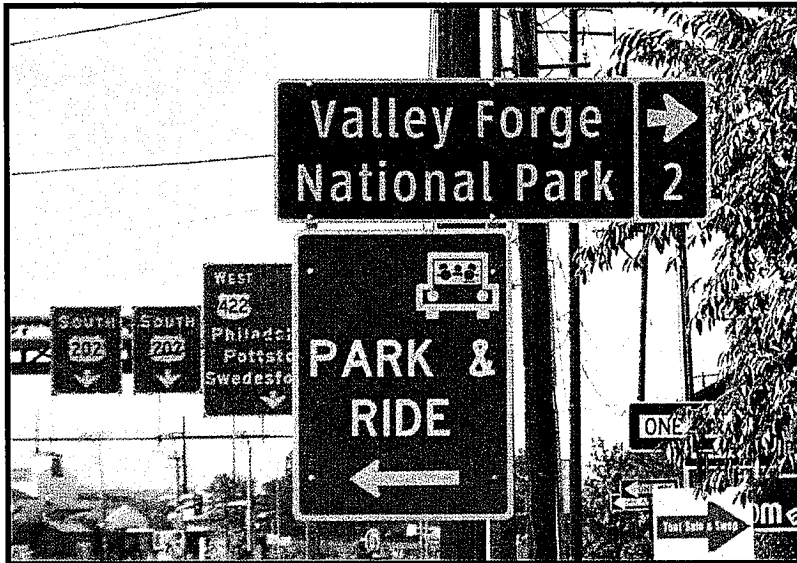
With photographic documentation of the sign conditions, I developed a PowerPoint presentation to share with the Pennsylvania Department of Transportation (PennDOT) highlighting the current signage and opportunities for improvement. I met with the PennDOT Traffic Operations Manager to review the findings of the highway sign evaluation. We discussed the need for improved signage so that visitors can find the park when traveling on the area's major highways. PennDOT prepared a plan to address the signage issues.

I also contacted the Pennsylvania Turnpike Commission to discuss similar signage issues. I prepared an official letter to the commission asking them improve signage for Valley Forge NHP at Exit 326. Commission officials indicated that improved signage could be included as part of a nearby project.

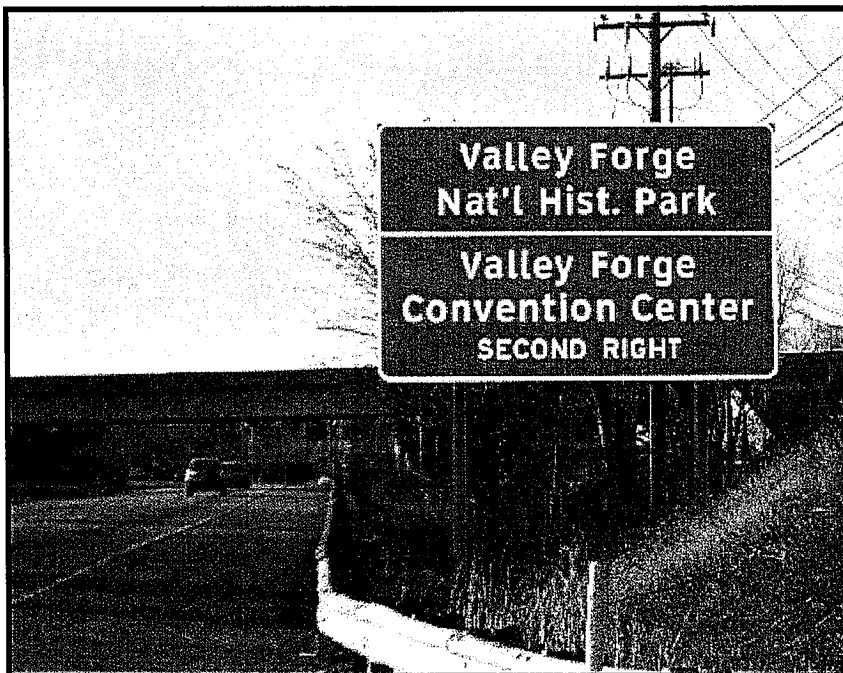


Left: Original sign on North Gulph Road
Above: Replacement sign on North Gulph Road

The pictures below show two of the new directional signs to Valley Forge National Historic Park.



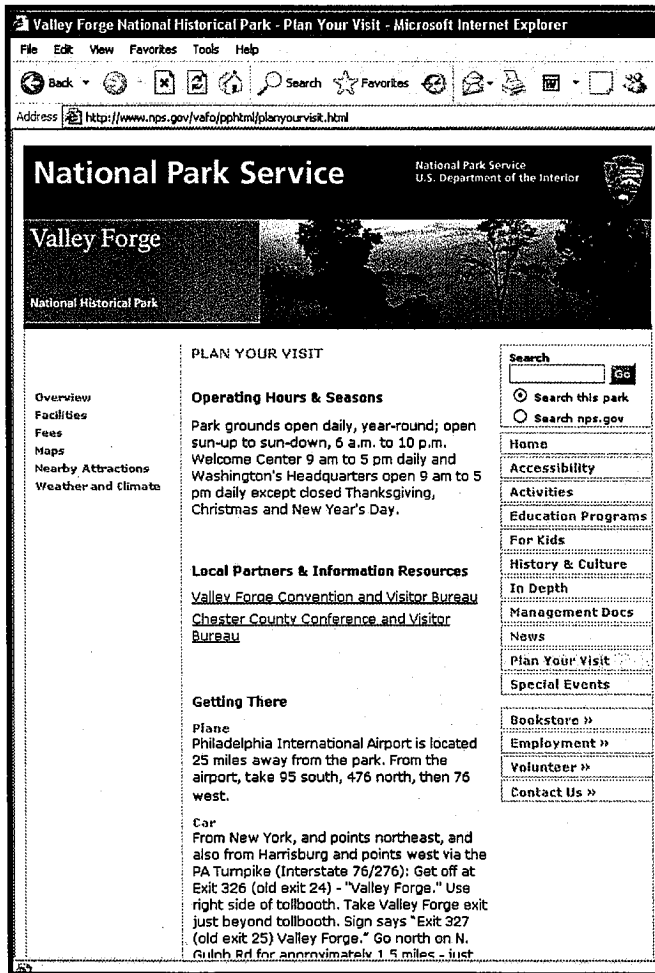
Left: Brand new sign on US 202, one of the major highways in King of Prussia and adjacent to the East Coast's largest shopping mall.



Left: A new traffic sign on US 422 directing visitors to the park.

3.2 Updating directions to Valley Forge NHP on the NPS Webpage

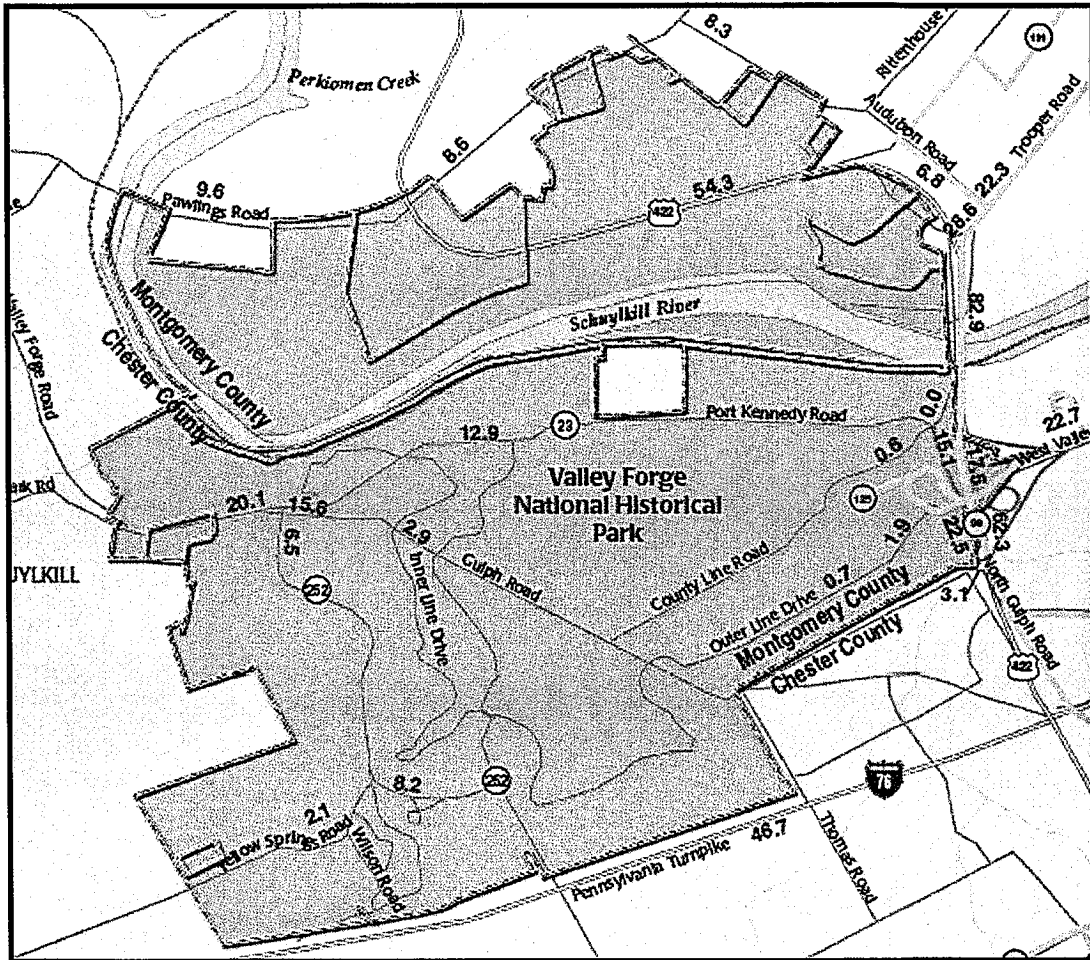
Visitors to the park expressed concern about the directions to the park found its web page. I reviewed and updated the travel directions to Valley Forge NHP posted on the internet. The update included directions for private vehicles and using public transportation to reach the park. The website was also updated to include a link to Maquest.com so that visitors can plan their own trip to the park.



Left: Updated Valley Forge National Historical Park website at www.nps.gov/vafo.

3.3 Speed Limit Signs

The two state highways that run through Valley Forge NHP are heavily used commuter routes (as the figure below shows). On PA 23, the Average Annual Daily Traffic (AADT) varies from 13,000 to 20,000 within the 3.0 mile stretch of road within the park. On PA 252, the AADT varies from 9,841 to 11,317 on the 1.75 mile stretch of road in the park. Large volumes of high-speed traffic traveling through the park detract from the environment of reflection and remembrance that park encourages.



Year 2002 Average Annual Daily Traffic Counts Report in Thousands.

There are three fundamental ways to affect changes in traffic speeds and patterns. Changes can be made in engineering, enforcement, or education. Typically, enforcement and education changes are cheaper and more easily implemented than making engineering modifications. Most of the park has a 35 mph (or less) speed limit. There was one section of PA 23 where the speed limit was 45 mph and the high speed limit contributed to rates of travel speed inconsistent with the historic nature of the park.

Contact was made with a PennDOT representative about maintaining a consistent speed limit (35 mph) throughout the park. Based on this effort, PennDOT and the local township reduced the speed limit and today the speed limit is no higher than 35 mph on PA 23 throughout the entire park.

In addition, I spoke with park law enforcement about the need to enforce the speed limit. Simply posting a new speed limit sign would not be enough to change driver's behavior.

3.4 General Management Plan

I reviewed the GMP to ensure that it properly documented the traffic calming projects that are proposed in a funding application to Delaware Valley Regional Planning Commission. He provided updated text and quantification of impacts so that the GMP can act as the environmental clearance document for the proposed improvements if/when they are constructed.

I completed a review of the Draft GMP/EIS and provided thoughts and comments based on his previous NEPA and EIS experience.

4.0 Long-term Projects

4.1 Alternative Transportation Program (ATP) Pilot Project

Nearly 20,000 vehicles per day commute through Valley Forge NHP. For historical park visitors, the high traffic volumes, particularly on scenic park roads, detract from the visitor experience. The ATP Pilot Project would establish a shuttle system that would allow several park roads to be closed to private vehicles. The shuttle system would enhance the visitor experience by creating a more peaceful environment while providing convenient access throughout to park.

I completed several of the planning steps necessary to make the shuttle a reality including:

- Estimated shuttle ridership
- Identified logical shuttle stops
- Calculated the approximate headways of shuttle routes
- Estimated the cost of each shuttle alternative
- Developed a preliminary public education and engagement process based on *Director's Order 75A: Civic Engagement and Public Involvement*

The shuttle system is being developed based on the goals and policies of the NPS's Alternative Transportation Program. I am responsible for gathering input from senior staff and coordinating its implementation with local transportation partners including the Greater Valley Forge Transportation Management Association.

In April 2006, I completed a multi-part funding application. The NPS and Federal Transportation Administration (FTA) made a call for proposals to fund ATP projects. The latest transportation bill was passed into law in late 2005. SAFETEA-LU allocates funds for alternative transportation projects in national parks and other Federal land management agencies.

If the proposed shuttle is funded, the park would benefit from the services of a Transportation Scholar to help perform a real-time evaluation of the routes, visitor response to the shuttle, and complete a financial proforma of a permanent shuttle.

4.2 Traffic Calming Projects

Shortly after my arrival, a consultant prepared a series of traffic calming recommendations for the park. The work was commissioned in response to the increasing traffic volumes on two of the main park roads and the need for pedestrians to safely cross the roads. A joint meeting with the consultant, regional planning commission, PennDOT, and park staff resulted in concurrence that the park was in need of traffic calming and that PennDOT would support the projects. PennDOT also stressed that the agency had money programmed to pay for the projects. One potential funding source identified was transportation enhancement (TE) funds which come from TEA-21 legislation.

I attended a workshop sponsored by the DVRPC about transportation enhancements funding and the application process. The application was a collaborative effort with a consulting firm. Funding would be used to construct a variety of traffic calming measures on PA 23 near Washington's Chapel and Varnum's Quarters. Prepared an application to PennDOT and DVRPC.

I worked with park staff and a consulting firm to prepare an application for transportation enhancements funds. The funds would be used to construct a variety of traffic calming measures on PA 23 near Washington's Chapel and Varnum's Quarters. The DVRPC, serving as the Philadelphia area's Metropolitan Planning Organization, is responsible for allocating federal funds for a variety of non-highway transportation projects. It is a competitive process that receives more requests for funds than are available. I attended several internal meetings and contacted area elected officials and governments soliciting letters of support for the project application. The application was endorsed by most of the townships surrounding the park, US Representative Curt Weldon, PA State Representative Daylin Leach, and PA State Representative Jacqueline Crahalla.

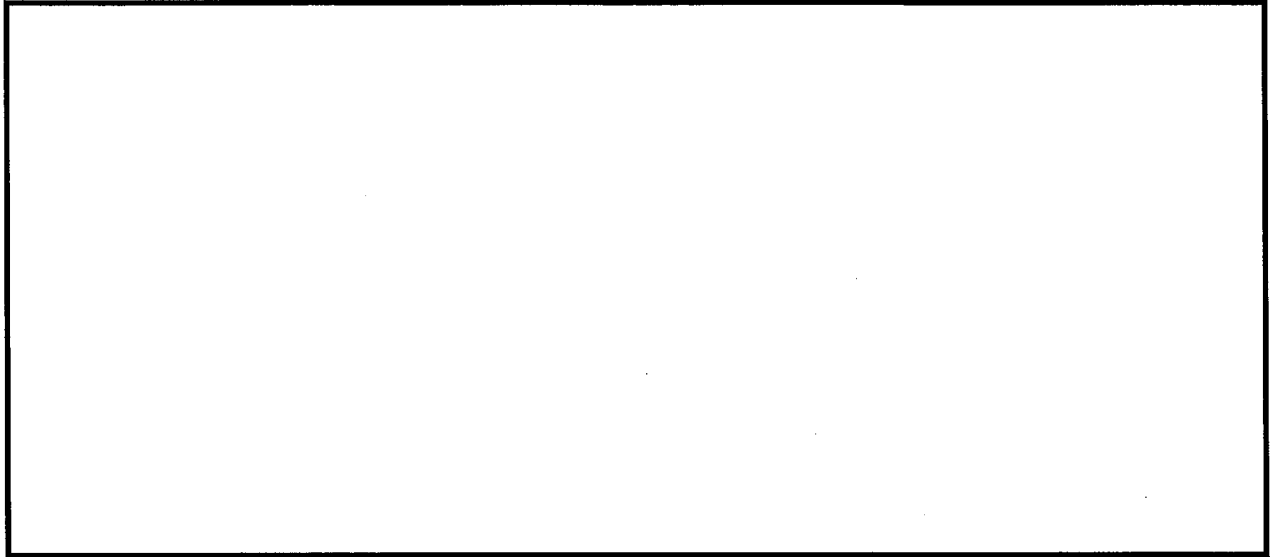
The *Pennsylvania Traffic Calming Handbook* is PennDOT's guidance document on traffic calming techniques, where it is applicable, and the approval process. Potential projects are ranked based on six categories including:

- Traffic speed
- Traffic volume
- Number of crashes
- Presence of elementary or middle schools
- Pedestrian generators
- Available pedestrian facilities

Completing the project ranking system was not a specific criterion within the transportation enhancements application. Nevertheless, I gathered information to complete the project ranking system. NPS law enforcement provided raw crash data and I analyzed the data to identify the type and number of crashes within the relevant geographic area. Car/deer crashes are common and I conducted a second level of analysis that removed the car/deer crashes from the total number of crashes. The analysis revealed that even without car/deer crashes the park would still score the maximum

number of points within the crash criterion. In this instance, a higher point total indicates greater need for traffic calming improvements.

Overall, the park scored very high in PennDOT's project ranking system.



Above: Overview of the traffic calming measures proposed on PA 23 near Varnum's Quarters and Washington Memorial Chapel.



Left: High-visibility signs notify drivers that pedestrians have the legal right-of-way in crosswalks. Educating drivers is one step in the overall goal of changing drivers' behaviors and enhance safety.

4.3 Betzwood Bridge Reconstruction

One of the on-going projects that I worked on was the Betzwood Bridge replacement project. The original Betzwood Bridge crossed the Schuylkill River and provided a direct connection between the north and south sides of the park. In approximately 1995, the bridge was removed for safety reasons. When it was removed, US 422 became the only crossing of the river for several miles near the park. US 422 is a very congested highway

and the absence of a convenient alternative river crossing forces park and local traffic onto the congested facility, exacerbating an already deficient situation.

As part of the Valley Forge NHP staff, we met to review the draft bridge design prepared by PennDOT. He prepared a response letter with suggestions about the overall bridge design, pedestrian accommodations, and aesthetics. A new landscaping plan was also developed as a result of the coordination. The result was an improvement in the overall bridge aesthetics plus the addition of a dedicated Schuylkill River observation area that was not included in the initial design.

4.4 Section 4(f) Evaluation for the US 422/PA 23 Interchange Reconstruction

As part of the multi-faceted effort to improve traffic flow and operations on US 422, reconstruction of the US 422/PA 23 interchange is planned. Most of the interchange is located within the park boundaries and its reconstruction triggers Section 4(f) of the Transportation Act of 1966.

Section 4(f) of the Transportation Act of 1966 generally prohibits the use of park lands for transportation projects unless certain criteria can be met. These are:

- There is no feasible and prudent alternative to the use of park land
- All possible planning to minimize harm to park land has been undertaken

Since its inception, the 4(f) review process has been a thorough but lengthy procedure. The review has been conducted at several levels including the park, regional, Washington-NPS, and Washington-DOI levels. The review and approval ensures that park resources and the visitor experience are protected.

In some cases, however, early consultation results in informal agreement among a park, a state transportation agency, the Federal Highways Administration (FHWA), and stakeholders that the use of park lands for a proposed project would not result in harm; that the project includes all possible planning to minimize harm; and that the cumulative result of the project would be an overall improvement and enhancement of the park.

To address these special cases, in April, 2005, the FHWA established a streamlined procedure for approving 4(f) uses of park lands when construction would provide a “net benefit” to them. The new Nationwide Programmatic Evaluation calls for excellent inter-agency coordination as well as a simplified approval process delegated to the field level of the agencies responsible for the affected lands.

I researched the new 4(f) programmatic agreement and how the ‘net benefit’ provision will affect Valley Forge. I contacted the Washington offices of FHWA and NPS to determine how the ‘net benefit’ determination process will work. Coordinated NPS effort to properly document the 4(f) programmatic agreement and work through the process.

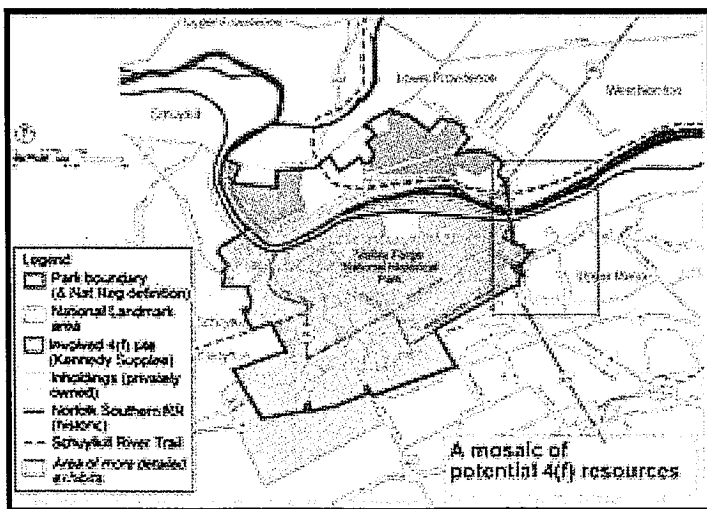
Valley Forge NHP, FHWA and PennDOT have actively worked together since 2001 to identify mutually acceptable approaches to the traffic congestion that plagues the park and surrounding region. Municipalities and all relevant federal, state, and local agencies have participated extensively through a steering committee process. A number of proposed projects have been identified and are at varying stages of planning and approvals.

The particular project in question is the reconstruction of the existing US 422 and PA 23 interchange within the park to ease congestion on US 422 as well as a relocation of North Gulph Road in the park to convey heavy traffic away from the park gateway. A number of alternatives that would avoid any 4(f) use of park land were identified and considered by PennDOT, FHWA, and Valley Forge NHP. While these alternatives would not have used park land, they also would not have addressed traffic congestion within the park. An alternative that does require use of park land, yet that would provide net benefits to the park, is recommended.

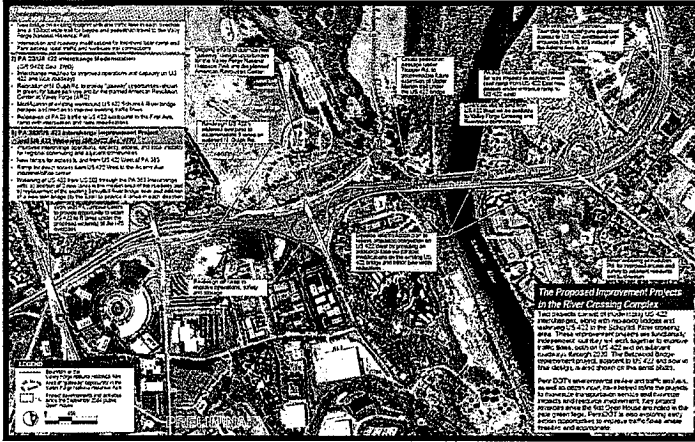
In this alternative, a portion of existing North Gulph Road in the park would be relocated to the edge of the park, taking with it the congestion and noise of thousands of vehicles per day. Grading and vegetative screening would further ameliorate the sight and sound of traffic. The old right-of-way would be vacated by PennDOT. The benefits to the park include:

- Improved traffic operations and improved access to the park
- Through-traffic relocated away from the park entrance and away from the Welcome Center
- Buffering of the view of and noise from traffic
- Space for development of a park “gateway”
- Improved visibility and access to the Kennedy-Suplee Mansion

Because the new 4(f) Net Benefit determination is a new policy, it turned out that Valley Forge NHP is the first Department of Interior Unit to implement the policy. I researched FHWA’s new ‘Net Benefit’ Programmatic Agreement and worked with consultant and regional NPS staff develop a process that can be used by all NPS units that choose to implement the new 4(f) policy.



The figure at left shows the variety of 4(f) resources at Valley Forge NHP.

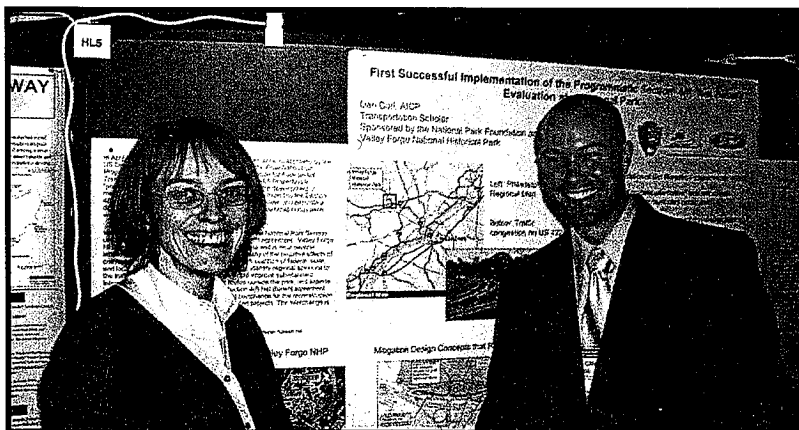


This figure shows the highway and interchange improvement projects planned in the immediate vicinity of Valley Forge NHP. The environmental compliance for the section highlighted in yellow will use the new Net Benefit agreement.

4.5 Transportation Research Board Annual Meeting Poster

The National Park Foundation and National Park Service made arrangements for the Transportation Scholars to present a poster at the Transportation Research Board (TRB) Annual meeting in Washington, D.C. The poster session allowed presenters to interact with conference attendees in a one-on-one fashion.

I presented the process and outcome of Section 4(f) Net Benefit Programmatic Evaluation for the US 422/PA 23 interchange project at the TRB conference. I spoke with a variety of people about the park's success including other NPS staff and representatives from FHWA, PennDOT, and other agencies throughout the US. I also attended a symposium in Washington, DC that Fran Maniella (NPS director) attended where she was able to hear about the successes of the Transportation Scholar program and thank the Ford Motor Company Foundation.



Amy Fox (FHWA Environmental Coordinator) and Dan Carl at the TRB poster session.

4.6 Valley Forge NHP Sign Plan

The National Park Service has introduced a new standard for park signs called *UniGuide*. NPS provides the following justification for the introduction of new standards:

“Signs are the most frequently used means of communicating with the 300 million people who visit national parks annually. In order to ensure that parks have the best possible signs, new standards have been developed to guide the planning, design, and fabrication of a broad range of sign types, from motorist guidance, to park entry and facility identification, to pedestrian wayfinding, safety, interpretation, resource protection, and general park information.”

The new standards offer park managers a way to integrate signs into a park’s overall program goals by ensuring consistency in appearance and content with other media. As a result, communications will be more certain, more rapid, more effective, and visitor safety, convenience, responsibility, and enjoyment will be more assured. Additionally, signs will contribute more effectively to the public’s perception of the National Park Service as one organization.”

Director’s Order No. 52C requires each park to develop a sign plan to guide the acquisition, installation, and maintenance of their signs. I developed a sign plan for the park that includes an inventory of all the signs within the park including the location, type, purpose, size, physical characteristics, condition, and the sign text. All of the signs were geospatially located using a Global Positioning System (GPS) device. The point dated was entered into the park’s Geographic Information System (GIS) and the GIS system was used to relate the sign location to the sign attributes recorded in a database. In all, 1,288 signs were recorded in the park.

Once the inventory was completed, I developed a sign plan (attached to this report) with general recommendation to improve signage within the park and specific recommendations to remove, replace, and/or otherwise update the signs. I worked closely with the park’s Trails Supervisor and GIS specialist to complete this work.

Right: Information sign outside the Administration Building designed with the *Uniguide* standards.

